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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,210	10/31/2003	Michael J. Nystrom	10030914-1	1502

7590 05/17/2005

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EXAMINER

BROWN, JAYME L

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/698,210	NYSTROM ET AL.	
	Examiner	Art Unit	
	Jayme L. Brown	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/31/03 &amp; 3/11/05</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statements submitted on 10/31/03 and 3/11/05 have been considered by the examiner.

### *Drawings*

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 111. **Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application.** Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance. On page 5, line 24 of the Specification, "stamper 110" should be changed to -- stamper 111 --.

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3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: d. **Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.** Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Specification***

4. The use of the trademark NORLAND 61® has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

On page 3, line 12, NORLAND 61® should be capitalized.

5. The disclosure is objected to because of the following informalities: On page 7, line 12, "molding polymer 215" should be changed to - - optically curable polymer 215 - - to keep consistent with the rest of the Specification.

On page 7, line 14, "Stamper blank 215" should be changed to - - Stamper blank 210 - -.

Appropriate correction is required.

#### ***Claim Objections***

Claims 8, 16, 19, and 21 objected to because of the following informalities:

Regarding claim 8, the phrase "said substrate is prepare to enhance" should be changed to - - said substrate is prepared to enhance - -.

Regarding claim 16 (page 12, line 23) and claim 21 (page 13, line 25), the phrase "removing excess material from said stamper blank" should be changed to - - removing excess material from said coated stamper blank - - in order to keep consistent with the claims.

Regarding claim 19 on page 13, line 12, the phrase "said optically curable polymer tolight" should be changed to - - said optically curable polymer to light - -.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 2, it is confusing how the substrate could be coated with a release layer and also have molded optical elements on selected areas of it. On page 3, lines 17-18 of the Specification, it says, "stampers are typically coated with release layer." It appears that the claim should read - - The method of Claim 1 wherein said stampers are coated with a release layer, - - and this is how it will be read for the purposes of this office action.

Claim 14 is rejected for having an improper Markush group. MPEP 2173.05(h) states as follows:

"Alternative expressions are permitted if they present no uncertainty or ambiguity with respect to the question of scope or clarity of the claims. **One acceptable form of alternative expression, which is commonly referred to as a Markush group, recites members as being "selected from the group consisting of A, B and C."** See Ex parte Markush, 1925 C.D. 126 (Comm'r Pat. 1925)."

Claim 14 should be amended as follows: - - The method of Claim 12 wherein said master is made from a material selected from the group consisting of silicon, metal, glass, and plastic. - -

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-2, 5-6, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamanaka et al. (EP 0,911,144) in view of Galarneau et al. (U.S. 5,597,613).

Regarding claim 1, Hamanaka et al. teaches a method for making molded optical elements on selected areas on a surface of a substrate comprising of coating the molds with a locally dispensed optically curable polymer; bringing the selected area on the surface of the substrate into contact with the coated molds; exposing the surface of the substrate in contact with said coated molds to light; and separating the substrate from the molds to leave the molded optical elements on the selected areas on the surface of the substrate (Column 6, line 23 – Column 7, line 4; Figure 1 (a-f)). Hamanaka et al. also teaches using a single stamper with plural concave portions separated by gaps, applying high refractive index resin to these portions, placing a large size glass substrate on top of the resin in the concave portions, and then dicing the substrate to separate the microlens arrays (Column 7, lines 23-34; Figure 5).

Hamanaka et al. is silent toward providing a first and second stamper each comprising of a mold and being separated by a gap. One skilled in the art would have readily appreciated that the microlens arrays from the teachings of Hamanaka et al.

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could be made using multiple stampers that are separated by gaps. The resin would be applied to the stampers, a large glass substrate would be placed on the resin in the stamper molds, and then the substrate would be diced. It is well known to use multiple stampers as shown for example by Galarneau et al. who teaches using quartz master elements (stampers) for tiling a large area diffractive optical element (Column 1, line 49 – Column 2, line 35; Column 5, line 45 – Column 6, line 12). The gaps (dicing areas) from the single stamper with the plurality of concave portions would correspond to the gaps that would separate the multiple stampers. One skilled in the art would have readily recognized that the two are alternate expedients which are obvious over one another in the absence of unexpected results and results in the same end product (microlens arrays). It is noted that the specification describes no criticality for having multiple stampers rather than one large stamper with multiple stamping regions separated from one another as shown for example in Figure 5 of Hamanaka et al. Also, one skilled in the art would have readily appreciated that using multiple stampers reduces manufacturing costs and provides additional weight reduction (Galarneau et al.: Column 1, lines 49-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple stampers that have molds in the method of Hamanaka et al. as suggested by Galarneau et al.

Regarding claim 2, Hamanaka et al. teaches that the stampers are coated with a release layer (Column 6, lines 23-26; Figure 1(b)).

Regarding claim 5, Hamanaka et al. teaches placing the coated molds into a vacuum chamber for degassing (Column 6, lines 41-43).



Regarding claim 6, Hamanaka et al. teaches that the substrate is made of glass (Column 6, lines 32-33), and it is well known that glass is substantially transparent to light.

Regarding claim 8, Hanamaka et al. teaches that the substrate is prepared with a coupling agent to enhance adhesion of the optically curable polymer when the optically curable polymer is cured (Column 6, lines 34-39).

Regarding claim 11, Hamanaka et al. teaches that there is a trap portion for excess resin at the periphery of the array of concave portions (in the gap) and that its depth (dimensions) are substantially equal to that of the concave portions (separation distance) (Column 2, lines 36-45; Column 3, lines 28-31 and 49-56). Therefore, one skilled in the art would have readily appreciated that this teaching corresponds to the dimensions of the gap being determined by the separation distance between the substrate and the mold when the optically curable polymer begins to flow.

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamanaka et al. (EP 0,911,144) in view of Galarneau et al. (U.S. 5,597,613), as applied to claims 1-2, 5-6, 8, and 11 above, and further in view of Kondo (U.S. Patent 6,653,157).

Regarding claim 3, Hamanaka et al. and Galarneau et al. are relied upon for the teachings above. Hamanaka et al. is silent towards the optically curable polymer being mechanically dispensed onto the molds. Kondo teaches a method of supplying liquid stuff (optically curable polymer) on optical elements by using a nozzle (Column 7, lines

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20-45). One skilled in the art would have readily appreciated using a nozzle to dispense the optically curable polymer, because it is possible to control the thickness of the lens shape part by adjusting the viscosity of the liquid stuff or by adjusting aspects of the nozzle. Also, the liquid stuff will not adhere to unintended parts since it is securely supplied only to necessary parts, so there is no waste (Kondo: Column 7, lines 32-43).

Kondo also teaches that the liquid stuff (optically curable polymer) can be supplied by injecting it using an ink jet head (Column 8, lines 55-57). One skilled in the art would have readily appreciated using an ink jet head to supply the liquid stuff, since the liquid stuff could be supplied in a short period of time; therefore, it is advantageous in productivity (Column 8, lines 57-60).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a nozzle or an ink jet head to dispense the optically curable polymer (liquid stuff) in the method of Hamanaka et al., as modified above, as suggested by Kondo.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamanaka et al. (EP 0,911,144) in view of Galarneau et al. (U.S. 5,597,613), as applied to claims 1-2, 5-6, 8, and 11 above, and further in view of Nishikawa et al. (U.S. Patent 6,730,459).

Regarding claim 4, Hamanaka et al. and Garlarneau et al. are relied upon for the teachings above. Hamanaka et al. is silent toward the locally dispensed optically curable polymer being dispensed by bringing the molds into contact with a reservoir of

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optically curable polymer. Nishikawa et al. teaches that the light transmitting layer precursor (optically curable polymer) can be placed on the master plate and/or the microlens array substrate by the method of dipping (Column 3, lines 42-50 and 59-64; Figure 1(A)). One skilled in the art would have readily appreciated that the molds could be dipped into a reservoir of optically curable polymer, since it is a conventional method of applying optically curable polymers. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to bring the molds into contact with a reservoir of optically curable polymer (dipping method) in the method of Hamanaka et al., as modified above, as suggested by Nishikawa et al.

12. Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamanaka et al. (EP 0,911,144) in view of Galarneau et al. (U.S. 5,597,613), as applied to claims 1-2, 5-6, 8, and 11 above, and further in view of Morita (U.S. Patent 6,814,897).

Regarding claim 7, Hamanaka et al. and Galarneau et al. are relied upon for the teachings above. Hamanaka et al. is silent toward the substrate being substantially reflective to light. Morita teaches that the substrate can be made of metal, such as Al, Fe, Cu, etc. (Column 6, lines 53-54). One skilled in the art would have readily appreciated that the substrate could have been made of metal and that metal is substantially reflective to light. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a substrate that is substantially reflective

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to light in the method of Hamanaka et al., as modified above, as suggested by Morita, since it is a conventional material to use for the substrate in molding applications.

Regarding claim 12, Hamanaka et al. and Galarneau et al. are relied upon for the teachings above. Hamanaka et al. is silent towards the first stamper comprising of: coating a stamper blank with the locally dispensed optically curable polymer; providing a master; bringing said master into contact with the locally coated stamper blank; exposing the locally coated stamper blank in contact with the master to light; and separating the master from the locally coated stamper blank to create the first stamper. Morita teaches pouring a UV curing liquid resin into the concavity-protubrance surface of the father (master) and then placing a transparent plate, such as a glass plate, upon the liquid resin to avoid introducing bubbles. UV radiation is then applied through the transparent plate, causing the resin to cure. The cured resin and transparent plate are then peeled off the father, and they make up the mother (stamper) (Morita: Column 10, lines 14-19; Column 10, line 65 – Column 11, line 20). One skilled in the art would have readily appreciated that the resin could be applied to either the stamper blank or the master as they are alternate expedients over one another and result in the same end product. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a stamper made by Morita's method in the method of Hamanaka et al., as modified above, since this is a conventional method to form molds (stampers).

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13. Claims 9-10, 13-14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamanaka et al. (EP 0,911,144) in view of Galarneau et al. (U.S. 5,597,613) and further in view of Morita (U.S. Patent 6,814,897), as applied to claims 1-2, 5-7, and 11-12 above, and further in view of Harden et al. (U.S. Patent 6,610,166).

Regarding claim 9, Hamanaka et al. and Galarneau et al. are relied upon for the teachings above. Hamanaka et al. is silent toward alignment marks being patterned on the surface of the substrate. Harden et al. teaches that optical elements have stand offs that are etched or replicated into a bottom substrate wafer and notches in the other wafer. These stand offs and notches serve as alignment features (Column 5, lines 16-26 and 45-47). One skilled in the art would readily appreciate having alignment marks on the surface of the substrate in order to facilitate alignment of the substrate to the molds. Therefore, it would have been obvious at the time the invention was made to have alignment marks on the substrate in the method of Hamanaka et al., as modified above, as suggested by Harden et al.

Regarding claim 10, Hamanaka et al. and Galarneau et al. are relied upon for the teachings above. Hamanaka et al. is silent toward thin metal elements being patterned on the surface of the substrate for optical functions. Harden et al. teaches having metal on the substrate surface (Column 6, lines 33-35). One skilled in the art would have readily appreciated having metal elements on the surface in order to block light. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have metal elements on the surface of the substrate for optical

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functions in the method of Hamanaka et al., as modified above, as suggested by Harden et al.

Regarding claim 13, Hamanaka et al., Galarneau et al., and Morita are relied upon for the teachings above. Hamanaka is silent towards the master for making the first stamper being coated with a release layer. Harden et al. teaches that the master is coated with a release layer (Column 7, lines 18-24). One skilled in the art would have readily appreciated having a release layer on the master to prevent bonding of the optically curable polymer to the master when making the stamper. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the master be coated with a release layer in the method of Hamanaka et al., as modified above, as suggested by Harden et al. since it is conventional technique when molding things.

Regarding claim 14, Hamanaka et al., Galarneau et al., and Morita are relied upon for the teachings above. Hamanaka et al. is silent toward the master for making the first stamper being made from a group of materials consisting of silicon, metal, glass, and plastic. Harden et al. teaches that the master could be made from glass or plastic (Column 7, line 2 and line 43). One skilled in the art would have readily appreciated that the master could be made out of glass or plastic since these are conventional materials used for masters in molding processes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the master be made of glass or plastic in the method of Hamanaka et al., as modified above, as suggested by Harden et al.

Regarding claims 16-18, Hamanaka et al. and Galarneau et al. are relied upon for the teachings above. Hamanaka et al. is silent towards the first stamper comprising of: coating a stamper blank with the locally dispensed optically curable polymer; providing a master; bringing said master into contact with the locally coated stamper blank; exposing the locally coated stamper blank in contact with the master to light; separating the master from the locally coated stamper blank; and removing excess material from the coated stamper blank to create the first stamper. Hamanaka et al. is also silent toward the master being coated with a release layer, and the excess material being removed by chemical etching. Morita teaches pouring a UV curing liquid resin into the concavity-protubance surface of the father (master) and then placing a transparent plate, such as a glass plate, upon the liquid resin to avoid introducing bubbles. UV radiation is then applied through the transparent plate, causing the resin to cure. The cured resin and transparent plate are then peeled off the father, and they make up the mother (stamper) (Column 10, lines 14-19; Column 10, line 65 – Column 11, line 20). One skilled in the art would have readily appreciated that the resin could be applied to either the stamper blank or the master as they are alternate expedients over one another and result in the same end product. It is also conventional in lithographic processes to use solvents (chemical etching) to remove any excess material as shown for example by Harden et al. (Column 9, lines 50-58). Harden et al. also teaches that the master is coated with a release layer (Column 7, lines 18-24). One skilled in the art would have readily appreciated having a release layer on the master and using chemical etching to remove excess material as both are conventional

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techniques in the molding process. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a stamper made by the above conventional method, to have a master with a release layer, and to use chemical etching to remove excess material in the method of Hamanaka et al., as modified above, as suggested by Morita and Harden et al., since this is a conventional method to form molds (stampers).

14. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamanaka et al. (EP 0,911,144) in view of Galarneau et al. (U.S. 5,597,613) and further in view of Morita (U.S. Patent 6,814,897), as applied to claims 1-2, 5-7, and 11-12 above, and further in view of Uehara (U.S. Patent 4,566,930) and Takakuwa et al. (U.S. Patent 6,280,660).

Regarding claim 14, Hamanaka et al., Galarneau et al., and Morita are relied upon for the teachings above. Hamanaka et al. is silent toward the master for making the first stamper being made from a group of materials consisting of silicon, metal, glass, and plastic. Uehara teaches that the master is made of metal (Column 3, lines 36-38). Takakuwa et al. teaches that the master is made of silicon (Column 1, lines 31-35). One skilled in the art would have readily appreciated that the master could be made out of metal or silicon since these are conventional materials used for masters in molding processes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the master be made of metal or silicon in the



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method of Hamanaka et al., as modified above, as suggested by Uehara and Takakuwa et al.

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamanaka et al. (EP 0,911,144) in view of Galarneau et al. (U.S. 5,597,613) and further in view of Morita (U.S. Patent 6,814,897), as applied to claims 1-2, 5-7, and 11-12 above, and further in view of Fujita (U.S. Patent Application Publication: US 2004/0090571)

Regarding claim 15, Hamanaka et al., Galarneau et al., and Morita are relied upon for the teachings above. Hamanaka et al. is silent toward the master used to create the first stamper having an alignment feature, which is transferred to the first stamper. It is well known that alignment marks can be transferred from stampers (masters) to the material being molded as shown for example by Fujita (Page 8, lines 3-5 of [0121]). One skilled in the art would have readily appreciated that alignment features on the master would be transferred onto the stamper that is being made. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the master transfer the alignment feature to the first stamper in the method of Hamanaka, as modified above, as suggested by Fujita, since it will help with the alignment of the stamper to the substrate when making the optical elements.

16. Claim 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamanaka et al. (EP 0,911,144) in view of Galarneau et al. (U.S. 5,597,613) and further

in view of Morita (U.S. Patent 6,814,897), as applied to claims 1-2, 5-7, and 11-12 above, and further in view of Houlihan et al. (U.S. Patent 6,700,708).

Regarding claims 19 and 20, Hamanaka et al., Galarneau et al. are relied upon for the teachings above. Hamanaka et al. is silent toward the first stamper comprising of: providing a master comprising a cavity wherein optical element shapes are disposed; overfilling said cavity with said locally dispensed optically curable polymer; bringing a stamper blank into contact with said optically curable polymer; exposing said stamper blank and optically curable polymer to light; and separating said stamper blank leaving said optically curable polymer attached to said stamper to create said first stamper. Hamanaka et al. is also silent toward the cavity of the master being coated with a release layer. Houlihan et al. teaches a method of forming a mold (stamper) from a master microlens array in a cavity wherein the base element of the cavity is coated with an anti-stiction coating (release layer). An elastomeric material fills the excess spaces of the cavity and is then cured. The elastomeric material and the backplate (stamper blank) are peeled from the master microlens array to create the mold (stamper) (Houlihan et al.: Column 3, lines 9-48). One skilled in the art would have readily appreciated that an optically curable polymer could be used instead of the elastomeric material to create the stamper as shown for example by Morita. One skilled in the art would have also appreciated coating the cavity with a release layer in order to facilitate removing the mold (stamper) from the master, since this is a conventional technique used in molding. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a stamper made from the method suggested by

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Houlihan et al. and Morita in the method of Hamanaka et al., since it is a conventional practice in molding.

17. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morita (U.S. Patent 6,814,897) in view of Harden et al. (U.S. Patent 6,610,166).

Morita teaches a method for making a stamper comprising: pouring a UV curing liquid resin into the concavity-protubrance surface of the father (master) and then placing a transparent plate, such as a glass plate, upon the liquid resin to avoid introducing bubbles. UV radiation is then applied through the transparent plate, causing the resin to cure. The cured resin and transparent plate are then peeled off the father, and they make up the mother (stamper) (Column 10, lines 14-19; Column 10, line 65 – Column 11, line 20).

Morita is silent towards removing the excess material from the coated stamper blank. It is conventional in lithographic processes to use solvents (chemical etching) to remove any excess material as shown for example by Harden et al. (Column 9, lines 50-58). One skilled in the art would have readily appreciated removing the excess material to complete the stamper blank. Also, one skilled in the art would have readily recognized that the resin could be applied to either the stamper blank or the master as they are alternate expedients obvious over one another and result in the same end product. It would have been obvious to one of ordinary skill in the art at the time the invention was made to remove the excess material to complete the stamper in the

method of Morita as suggested by Harden et al. since it is conventional in the lithographic processes.

18. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morita (U.S. Patent 6,814,897).

Morita teaches a method for making a stamper comprising: pouring a UV curing liquid resin into the concavity-protubrance surface of the father (master) and then placing a transparent plate, such as a glass plate, upon the liquid resin to avoid introducing bubbles. UV radiation is then applied through the transparent plate, causing the resin to cure. The cured resin and transparent plate are then peeled off the father, and they make up the mother (stamper) (Column 10, lines 14-19; Column 10, line 65 – Column 11, line 20). One skilled in the art would have readily appreciated that the resin could be applied to either the stamper blank or the master as they are alternate expedients over one another and result in the same end product. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the resin to either the stamper or the master in the method of Morita, since they will result in the same end product.

### ***Conclusion***

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jayme L. Brown whose telephone number is 571-272-8386. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on 571-272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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